



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/827,256

04/05/2001

Stephen A. Empedocles

019916-004100US

4344

20350

7590

05/06/2004

TOWNSEND AND TOWNSEND AND CREW, LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834

EXAMINER

SMITH, ZANDRA V

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/827,256

Applicant(s)

EMPEDOCLES ET AL.

Examiner

Zandra V. Smith

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5, 8, 11, 17, 18, 24, 25, 27, 32, 34-42, 45, 47, 48, 53 and 54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 and 18 is/are allowed.
- 6) ☒ Claim(s) 5, 8, 24, 25, 27, 34, 40-42, 45, 47, 48 and 53 is/are rejected.
- 7) ☒ Claim(s) 11, 32, 35-39 and 54 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

Applicant's amendment, dated 30 December 2003, has been entered and an office action in response follows.

#### *Claim Rejections - 35 USC § 102*

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 5, 34, 40 are rejected under 35 U.S.C. 102(e) as being anticipated by *Kambara et al. (US 6,288,220 B1)*.

As to **claim 5**, Kambara discloses a DNA Probe array, comprising:

spatially restraining a plurality of spectrally labeled bodies (col. 8, lines 10-15)  
simultaneously in an array (4);

in the case of fluorescence measurement, dispersing the spectrum produced from each body (col. 8, line 65-col. 9, line 2); and

identifying each body from a dispersed spectrum produced when each body is illuminated (col. 8, lines 23-40), the spectrum being different (col. 8, lines 62-65) since different fluorophores are used.

As to **claim 34**, Kambara discloses a DNA Probe array, comprising:

a support having an array of sites(7, col. 8, lines 10-15);  
a plurality of bodies (col. 8, line 61-col. 9, line 2) having a label for generating an identifiable spectrum, the bodies being restrainingly receivable at the sites (col. 8, lines 15-20);  
and

an optical train (col. 8, lines 25-40) with a dispersive element (col. 9, line 1).

Art Unit: 2877

As to **claim 40**, Kambara discloses everything claimed, as applied above, in addition the sites comprise a discrete array of a material capable of bonding to the bodies (col. 7, lines 50-65).

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 45 is rejected under 35 U.S.C. 102(b) as being anticipated by *Ulmer (5,776,674)*.

As to **claim 45**, Ulmer discloses a chemical, biochemical and biological processing in thin films, comprising:

a plurality of bodies released in a fluid, the bodies having labels for generating identifiable spectra (col. 2, lines 23-24 and col. 6, lines 30-40);

an energy transmitter coupled to the fluid so as to spatially restrain at least one body and a sensor oriented to receive the spectrum from the body wherein the at least one body generates the spectrum in response to the restraining energy (col. 10, lines 46-62).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 41, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over

***Kambara et al. (US 6,288,220 B1)***.

As to **claims 8 and 41**, Kambara discloses everything claimed, as applied above, in addition figure 6 discloses an embodiment where the spectra are sequentially sensed (col. 11, lines 15-40). It would have been obvious to one having ordinary skill in the art at the time of

Art Unit: 2877

invention to sequentially sense the spectra to allow for sensing the spectra in a two-dimensional probe array.

As to **claim 42**, Kambara discloses everything claimed, as applied above, with the exception of the spacing of the sites, however as shown in figures 3-6 the sites are spaced from one another. It would have been obvious to one having ordinary skill in the art at the time of invention to space the sites to reduce interference from light generated at adjacent sites.

Claims 24-25, 27, 47-48 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ulmer (5,776,674)*.

As to **claims 24-27**, Ulmer discloses a chemical, biochemical and biological processing in thin films, comprising:

releasing a plurality of bodies in a fluid (col. 5, lines 16-30);

spatially restraining a first body within the fluid by transmitting restraining energy through the fluid (col. 5, lines 16-30), wherein the spatially restraining step is performed with a focused laser beam acting as an optical tweezer (col. 5, lines 16-30). Ulmer additionally discloses generating a spectrum and identifying the body based on the spectrum (col. 2, lines 23-24 and col. 6, lines 30-40). In addition an embodiment is provided that includes spatially restraining a plurality of bodies simultaneously in a line (col. 12, lines 37-50). It would have been obvious to one having ordinary skill in the art at the time of invention to restrain a plurality of bodies along a line for increased sample throughput.

As to **claim 47**, Ulmer discloses everything claimed, as applied above, in addition col. 12, lines 25-35 provide alternative systems for optical trapping (moving the trap or the substrate). It would have been obvious to one having ordinary skill in the art at the time of invention to

Art Unit: 2877

include a scanner with the movable light beam (see claim 1) to properly the laser beam to the substrate and to allow for the examination of multiple particles.

As to **claim 48**, Ulmer discloses everything claimed, as applied above, in addition the optical train images the site toward the sensor and the energy transmitter moves the body toward the site (col. 6, lines 30-45).

As to **claim 53**, Ulmer discloses everything claimed, as applied above, in addition an embodiment is provided to restrain a plurality of bodies along a line (col. 12, lines 37-47). It would have been obvious to one having ordinary skill in the art at the time of invention to restrain a plurality of bodies along a line for increased sample throughput.

*Allowable Subject Matter*

Claims 17-18 are allowable over the prior art of record.

Claims 11, 32, 35-39, and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious, sequentially spatially restraining the bodies and drawing the first body into an opening by drawing fluid into the opening, expelling the body from the first opening and repeating with the second body, spatially restraining a plurality of spectrally labeled bodies so as to define an array wherein the bodies are restrained within an array of openings affixed in a multi-well plate (claim 17), openings in the support structure, the dispersed image having a dispersion axis at an angle to the a line onto the sensor surface, in combination with the rest of the limitations of the claims.

Art Unit: 2877

***Response to Arguments***

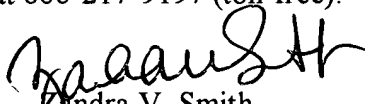
Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

***Fax/Telephone Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (571) 272-2429. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Zandra V. Smith  
Primary Examiner  
Art Unit 2877

May 3, 2004